



## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification <sup>7</sup> : <b>C02F 11/12</b>		<b>A1</b>	(11) International Publication Number: <b>WO 00/58229</b>
			(43) International Publication Date: 5 October 2000 (05.10.00)
(21) International Application Number: <b>PCT/FI00/00262</b> (22) International Filing Date: 29 March 2000 (29.03.00) (30) Priority Data: 990696                      29 March 1999 (29.03.99)                      FI 19992178                    11 October 1999 (11.10.99)                    FI 19992853                    31 December 1999 (31.12.99)                    FI (71) Applicant (for all designated States except US): <b>ETOR OY [FI/FI]; Haapakuja 11 C 19, FIN-90650 Oulu (FI).</b> (72) Inventor; and (75) Inventor/Applicant (for US only): <b>TORKKELI, Esko [FI/FI]; Haapakuja 11 C 19, FIN-90650 Oulu (FI).</b> (74) Agent: <b>LAURINOLLI, Tapio; Patenttitoimisto Tapio Laurinolli, P.O. Box 258, FIN-90101 Oulu (FI).</b>		(81) Designated States: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).  Published With international search report. Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments. In English translation (filed in Finnish).	

BEST AVAILABLE COPY

(54) Title: METHOD OF TREATING AND UTILIZING SLUDGE

## (57) Abstract

A method of treating and utilizing sludge is characterized in that in a first phase (1, 2) sludge particles are bound to the surface of hydrophobic organic grains, like hydrophobic grains of peat, in a second phase (4) the grains obtained thereby, having a layer of sludge particles including a lot of water on the surface of hydrophobic grains, are dried to hydrophobize also the surface layer, and in a third phase (5) an essential portion of the hydrophobic grains obtained thereby are circulated back to said first phase of the method. Attachment of sludge particles to the surface of hydrophobic grains is promoted by extruding (2) the mixture of sludge and hydrophobic grains. Grains are circulated in the method 5 to 10 times, for example. The method may include a rapid continuously operating composting between said first and second phase. With the invention, very remarkable savings are achieved in raw material costs of sludge treatment. The sludge is brought to a solid and advantageous form largely by means of the solid matter and energy of the sludge itself. The invention may be utilized especially in biological treatment of waste water, manufacture of fertilizers and treatment of sludge for burning.

